System for Tracking Passengers Insidethe Airport using IOT

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Abstract:

The proposed system is intended to track passengers inside an airport terminal by the used of RFID cards and IoT. The proposed system when implemented will solve the problem faced in searching for a passenger in the entire airport. This will be achieved by dividing the airport into a number of segments. After checking into the airport each passenger will be given a RFID card which will act as an access key at the entrance and exit points of the segments. Whenever a passenger swipes his card and moves into another segment, this information is passed on to the authorities. Based on this information, when required a particular passenger can be located with much more ease by the airport authorities because instead of searching the entire airport they will have to search only a single segment. Also if the airport authorities are tipped about someone being suspicious, then that passenger's card can be blocked without his/her knowledge and when this blocked card is swiped at the reader, a buzzer is activated upon which the passenger is taken in for questioning. This way the location of a particular passenger can be found with easy and in turn this improves the security inside the airport terminal.

I. INTRODUCTION

Airport industry is one of the fastest growing industries in the world and it is growing at a rapid pace. Aviation industry is one of the areas which have a strong potential to benefit from Radio Frequency Identification (RFID) and the Internet of Things (IoT).A lot of advancements are taking place by the day in terms of the technology of the flights, management systems, booking systems, security and surveillance etc. Though there have been advancements in for better techniques and systems so as to face any problem. One way this can be done is by keeping a track of all the passengers entering and leaving the airport. Considering that the number of passengers handled per day is a lot, it is very difficult to do so. But if the location of the passenger can be tracked then in case of an emergency a particular passenger (who may be a suspect) can be found with ease.

II. OBJECTIVE OF THE PROJECT

The main objective of the project is to develop a system for passenger tracking by which the approximate location of the passengers can be found with ease inside the airport terminal so as to improve the ease of finding a particular passenger as well as security in the airport.

In the proposed system the airport terminal is divided into segments. Each passenger is given a fid tag at the check in which acts as a passkey at the entrance of each segment. Whenever the passengers swipe their RFID tag at the gate, their details get updated with the airport authorities. This happens as the details of the passenger get displayed at the display of the authorities via WIFI. By looking at this data they can locate the

segment in which the passenger is present when needed.

III. TECHNICAL APPROACH

The proposed system will use ARM7 microcontroller. Every passenger will be given an RFID card. At each segment's passage point the RFID readers read the data from the card when swiped. The details from the RFID reader will be updated via IOT using a Wi-Fi module and will also be displayed on a LCD display. This system simplifies the process of searching for particular passengers as the segment in which they are present will be known beforehand.

3.1. PRINCIPLE OF OPERATION

The system uses radio frequency identification to track the location of passengers inside the airport terminal. The airport terminal is divided into segments and each segment has an entry gate.
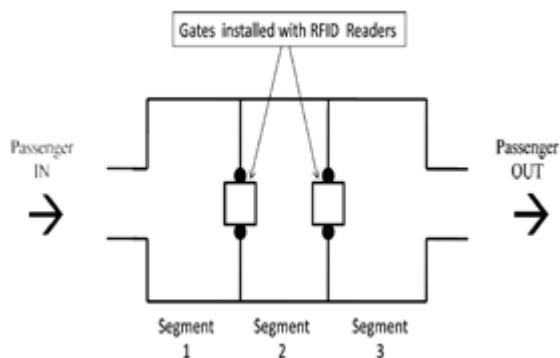

Fig1. Proposed System's Theoretical diagram.

Each gate is equipped with an RFID reader. The passengers at will be given RFID tags in the form of wrist bands after they check into the airport terminal. These cards serve as access keys at the gates. Whenever a passenger swipes their card the details are sent to the authority's display devices. Also if the authorities are notified about a customer's suspicious identity then the concerned persons card can be blocked without their knowledge. This way when the customer with the blocked card swipes his card at the gate the buzzer gets activated and the security is notified.

3.2. BLOCK DIAGRAM & FLOWCHART

The block diagram is drawn as two separate blocks the, one being the transmitter block and the other the receiver block. At the transmitting end whenever a passenger swipes his card at the reader, the data of the tag gets transmitted. The details of the passenger get displayed at the LCD when the card is swiped. At the receiving end after the tag is swiped, the data is sent by the controller via the WIFI module to a remote wirelessly connected display of the authorities.
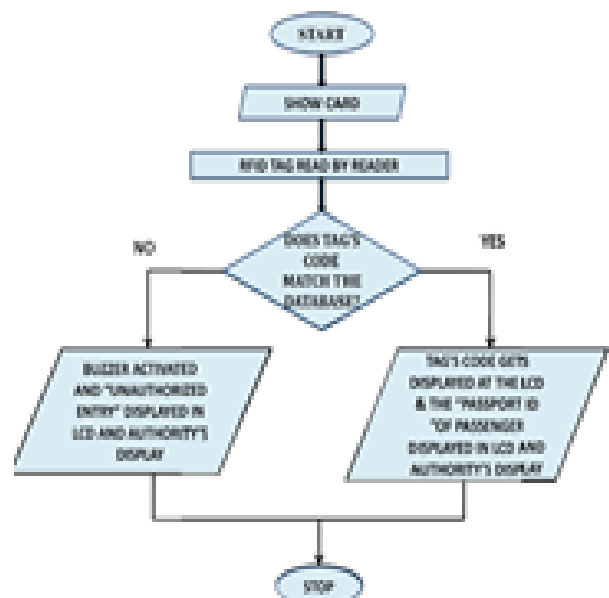
Transmitter
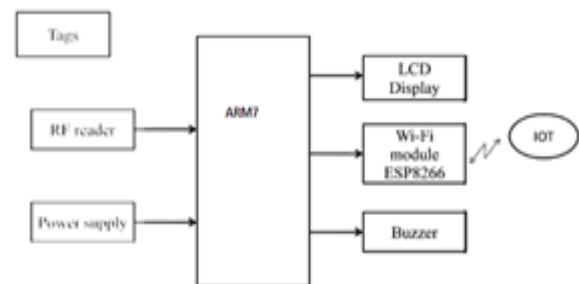
Reciever Block

Fig 3. Block diagram of System For Tracking Passengers Inside The Airport
FLOWCHART

IV. RESULTS

Stage 1: Initialization of the system Initially when the kit is switched on, the lcd displays a message showing

"System For Tracking" followed by "WIFI initializing" as an indication that the system is getting ready to begin its operations.

Fig 5.1 Opening Message on LCD

Fig 5.2 Initialization Status displayed in LCD.

Stage 2: Operation stage After this "Show the Card" is displayed in the lcd indicating that the system is ready to read the tags .

Fig 5.3 LCD Message Indicating The System Is Ready To Read The Tag.

Stage 3: Swiping of tags When a passenger swipes the card two scenarios arise. In one case a passenger holds a valid card and in the other the passenger holds a blocked/invalid card Case i:- When a passenger swipes a valid card the RFID number and the Passport ID get displayed on the LCD and the authority's Display (MOBILE PHONE) indicating that a passenger bearing the recorded Passport ID has crossed the gate.

Fig 5.4 RFID Tag code being displayed when passenger swipes tag.

Fig 5.5 Passport Id of passenger is displayed when Tag is swiped
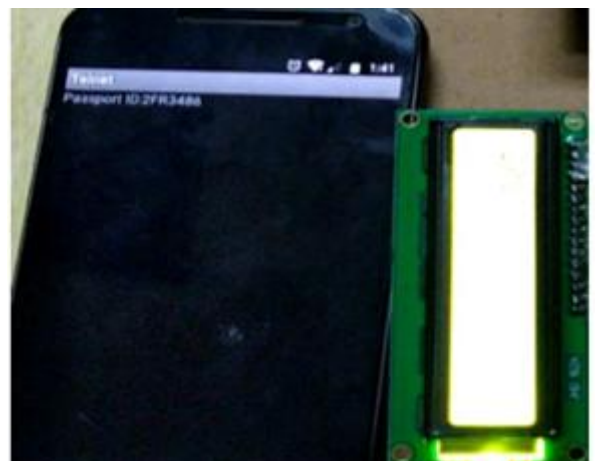

Fig 5.6 Passport Id Displayed in the authority's device (PHONE)

when passenger swipes the tag Case ii:- When an passenger's identity is found to be suspicious, their card can be blocked without their knowledge. When this blocked card is swiped at the gate the buzzer gets activated and also a message is displayed in the LCD and authority's display (MOBILE PHONE). This way the suspicious passengers can be detained for questioning with ease.

Fig 5.7 "Unauthorized" is displayed in the LCD when a blocked/unidentified tag is swiped

Fig 5.8 "Unauthorized entry" is displayed at the authority's screen (PHONE) when a blocked/unidentified tag is swiped.

V. CONCLUSION

The project "System for Tracking passengers Inside the Airport Terminal Using RFID and IoT" has been successfully designed and tested. The primary advantage of this system is, it improves the ease with which a passenger can be tracked in the terminal. The system uses radio frequency identification to track thelocation of passengers inside the airport terminal. The airport terminal is divided into segments and each segment has an entry gate. Each gate is equipped with an RFID reader. The passengers at will be given RFID tags in the form of wrist bands after they check into the airport terminal. These cards serve as access keys at the gates. Whenever a passenger swipes their card the details are sent to the authority's display devices. Also if the authorities are notified about a customer's suspicious identity then the concerned person's card can be blocked without their knowledge. This way when the customer with the blocked card swipes his card at the gate the buzzer gets activated and the security is notified.

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